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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,217	05/07/2007	Christof Niehrs	025953-001	6923

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EXAMINER	
MARVICH, MARIA	
ART UNIT	PAPER NUMBER
1633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/575,217	NIEHRS ET AL.	
	Examiner	Art Unit	
	MARIA B. MARVICH	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 October 2007* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/4/10*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to an amendment filed 12/18/09. Claims 9-29 are pending.

Election/Restrictions

Applicant's election with traverse of Group XVIII (claims 10 and hence newly added claims 21-29) in the reply filed on 12/8/09 is acknowledged. The traversal appears to be on the grounds that a restriction requirement made with inadequate authority can put at risk of invalidation of related cases and does not insulate a patentee from finding of obviousness double patenting of divisional cases. This is not found persuasive because it is not clear what claims and groups if any applicants consider improper. The examiners authority only rests in the ability to reconsider the basis of the restriction as set forth in the action mailed 9/18/09. In this case the claims encompass a number of inventions that were deemed to be unrelated under a number of provisions. First, there is indication that each of the futrin molecules function in distinct manners and hence one would not expect the futrin molecules to be interchangeable. Secondly, the methods of diagnosing diseases, identifying binding partners, identifying activators/agonists, inhibitors/antagonists, identifying drug candidates and preparing pharmaceutical compositions each comprise materially different products and steps and are not demonstrated of overlap in scope. The elected group is drawn to a method of identifying a binding partner, which method requires that a compound be screened for binding. Methods of identifying modulators do not require that the compounds be assayed for binding. Furthermore, while some binding partners

can be used as modulators or as drug candidates as evidenced by the newly added claims not all modulators or drug candidates are binging partners.

The requirement is still deemed proper and is therefore made FINAL.

Claims 9 and 11-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected subject matter, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 12/18/09.

Information Disclosure Statement

IDS' filed 9/15/06 and 2/4/10 have been identified and the documents considered. The signed and initialed PTO Form 1449 has been mailed with this action.

Sequence Compliance

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth below or on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures. Specifically, figures 3, 4 and 6A contain sequences that are not identified by sequence identifier numbers. If the sequences can be found in the sequence listing it would be remedial to insert the appropriate SEQ ID NO:s. If not, a substitute paper copy of the "Sequence Listing", as well as an amendment directing its entry into the specification, CRF and letter stating that the contents of

the sequence listing and the CRF are the same and contain no new matter is required. **The nature of the non-compliance did not preclude the examination on the merits of the instant application, the results of which follow.**

Drawings

Figures 15 and 16 are objected to under 37 CFR 1.83(a) because they fail to show any details as described in the specification. Specifically, the figures are so small that the details are indiscernible. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: on pages 37, 38 and 41 numbers appearing to be SEQ ID NO:s have been hand entered in a specification submitted 4/10/067. However, for clarification, the claim should be amended to incorporate text such as -- SEQ ID NO:2-- according to the amendment format under 37 CFR 1.121.

As well, figures 5A and B are not labeled as such.

Claim Objections

Claims 10 are objected to because of the following informalities: claim 10 is objected to as comprising withdrawn subject matter. Appropriate correction is required.

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: how determining the amount of compound bound to futrin 2 provides a measure of level of expression of the futrin 2.

Claim Rejections - 35 USC § 112, first paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of identifying a binding partner for futrin 2 (SEQ ID NO:26) wherein the method comprises contacting SEQ ID NO:26 with a compound to be screened wherein binding is assayed and compounds that bind are identified as binding partners, does not reasonably provide enablement for any other embodiment. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

The test of enablement is whether one skilled in the art could make and use the claimed invention from the disclosures in the patent coupled with information known in the art without undue experimentation (*United States v. Telectronics, Inc.*, 8 USPQ2d 1217 (Fed. Cir. 1988)). Whether undue experimentation is required is not based on a single factor but is rather a conclusion reached by weighing many factors (See *Ex parte Forman*, 230 USPQ 546 (Bd. Pat. App. & Inter, 1986) and In *re Wands*, 8USPQ2d 1400 (Fed. Cir. 1988); these factors include the following:

The MPEP teaches, "However, claims reading on significant numbers of inoperative embodiments would render claims non-enabled when the specification does not clearly identify the operative embodiments and undue experimentation is involved in determining those that are operative. Atlas Powder Co. v. E.I. duPont de Nemours & Co., 750 F.2d 1569, 1577, 224 USPQ 409, 414 (Fed. Cir. 1984); In re Cook, 439 F.2d 730, 735, 169 USPQ 298, 302 (CCPA 1971). (see MPEP 2164.08(b). First, the instant claims are drawn to a method of identifying a binding partner of futrin 2 which is identified as SEQ ID NO:26. The method comprises contacting futrin 2 with a compound and "determining whether the compound affects an activity of the polypeptide or whether binding of the compound to futrin has occurred". The method is designed to identify binding partners and to this end it is not clear how the step of "determining whether the compound affects an activity of futrin" is capable of achieving such a goal as such as compound need not bind to affect activity. The only indication of a compound that is a binding partner is one in which binding activity is detected and hence this step is required of the methods.

Secondly, Applicants have added new claims 25, 26 and 29 drawn to methods of determining the amount of compound bound to futrin 2 as a measure of levels of futrin 2as well

the level of expression is compared to a control and thus provides an indication of a disease associated with aberrant expression of futrin 2. While the claims have been newly added, support is not found in the specification for such steps and hence is not found in the priority documents. Therefore, these claims constitute NEW MATTER. As set forth above, it is not clear how determining the amount of compound bound to futrin 2 provides a measure of level of expression of the futrin 2. The method of determining binding of a test compound to a peptide is typically done *in vitro* and hence levels of peptide added are at the discretion of the practitioner. Hence, it appears as if claims 25 and 26 are limited to a cellular measure of binding. These steps are not clearly set forth. However, even given a cellular binding state, it is not clear how binding of a compound correlates to a *level of expression* of a protein i.e. a step of production of the protein and the specification is absent any steps that would provide such ability to correlate.

Even should a measure of binding be correlative with levels of futrin 2 in a cell, absent a clear control, it is not clear how the levels can be used as an indicator of disease. The physiological art is recognized as unpredictable. (MPEP 2164.03.) In cases involving predictable factors, such as mechanical or electrical elements, a single embodiment provides broad enablement in the sense that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific laws. In cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved. Applicants propose a number of diseases and disorders that are associated with aberrant futrin 2 expression, however, it is not clear that these are art accepted claims and hence, the ability to identify a disease that is associated with futrin 2 aberrant expression is unclear.

Secondly, the control level is critical in this type of experiment. However, no such control has been identified and furthermore, the claim does not set forth a clear connection between the expression level and the relationship with a disease.

Thirdly, the recitation in claims 23 and 28 that the "compound inhibits the activity of the futrin 2 polypeptide" or :the compound exhibits agonist or antagonist activity" are "reach-through" claims that requires possession of a compound identified through the claimed methods. The written description requirement under 35 USC 112, first paragraph may be met by sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant identifying characteristics, i.e. structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between structure and function, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. Applicant is referred to the Guidelines on Written Description published at FR 66(4) 1099-1111 (January 5, 2001) (also available at www.uspto.gov). In this case, the compound is an unidentified compound whose activity is to be tested in the method claims that are recited. Hence, one cannot know what the activity of the compound is prior to the assay.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 10, 21-24, 27 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Warren et al WO 02/060492 published 8/2/2002, rejection based upon 20040077048.

Warren et al teach a peptide comprising SEQ ID NO:26 wherein the method comprises detecting binding of the polypeptide to a test compound (see e.g. SEQ ID NO:12 and ¶ 0045). The test compound can be an antibody (see e.g. ¶ 0201). As well as binding, affect of activity of the peptide is analyzed (see e.g. ¶ 0202). The compound can be tagged (see e.g. ¶ 0203). It is noted that binding assays typically are drawn to addition of a known amount of peptide with a test compound followed by a measure of amount of bound and unbound peptide. Hence, a practitioner would following classic methods of binding assays determine the level of protein before and after binding.

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Qy          1 MQFRLFSFALIILNCMDYSHCQGNRWRRSKRASYVSNPICKGCLSCSKDNGCSRCQQKLF 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MQFRLFSFALIILNCMDYSHCQGNRWRRSKRASYVSNPICKGCLSCSKDNGCSRCQQKLF 60

Qy         61 FFLRREGMRQYGECLHSCPSGYYGHRAPDMNRCARCRIENCDSCFSKDFCTKCKVGFYLH
120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 FFLRREGMRQYGECLHSCPSGYYGHRAPDMNRCARCRIENCDSCFSKDFCTKCKVGFYLH
120

Qy        121 RGRSFDECPDGFAPLEETMECVEGCEVGHWSEWGTCSRNNRTCGFKWGLETRTRQIVKKP
180
              ||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 RGRCFDECPDGFAPLEETMECVEGCEVGHWSEWGTCSRNNRTCGFKWGLETRTRQIVKKP
180

Qy        181 VKDTIPCPTIAESRRCKMTMRHCPGGKRTPKAKEKRNKKKKRKLIERAQEGHSVFLATDR
240
              |||||||||||||||||||||||||||||||||||||||||||||||| |||||||||
Db        181 VKDTIPCPTIAESRRCKMTMRHCPGGKRTPKAKEKRNKKKKRKLIERAQEQHSVFLATDR
240

Qy        241 ANQ 243
              |||
Db        241 ANQ 243
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIA B. MARVICH whose telephone number is (571)272-0774. The examiner can normally be reached on M-F (7:00-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach, PhD can be reached on (571)-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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